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Risks of Fatal Injuries to Farm Workers 55-Years of Age and Older

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BACKGROUND

Agricultural production has long been identified as one of the most hazardous industries in the United States [National Safety Council, 1972; Myers and Hard, 1995], as well as in Canada, Australia, and parts of Europe [Meng, 1991; Stout et al., 1990; National Safety Council, 1995]. Previous studies have identified older workers (generally above the age of 54-years) to be the segment of the agricultural workforce which is at the highest risk for occupational fatalities in the United States [Purschwitz and Field, 1986; Myers and Hard, 1995; Kisner and Pratt, 1997]. To understand better the characteristics of these fatalities to older agricultural workers, the National Institute for Occupational Safety and Health (NIOSH) analyzed data from two national occupational fatality surveillance systems: the National Traumatic Occupational Fatalities (NTOF) surveillance system, and the Census of Fatal Occupational Injuries (CFOI) surveillance system.

METHODS

The NTOF is a death certificate-based census of occupational fatalities maintained by NIOSH, which relies on the injury at work item on the death certificate [Jenkins et al., 1993]. NTOF data for the years 1990 through 1993 were examined because these were the years that had detailed industry and occupation codes available. The CFOI is a multi-record-based census of occupational fatalities maintained by the U.S. Bureau of Labor Statistics (BLS). The CFOI includes all occupational injury deaths regardless of the age of the victim. CFOI data for the years 1992 through 1995 were available at the time of this analysis. Information on the cause of death in the CFOI is based on the ANSI Z16 standard [National Safety Council, 1996]. In order to make comparisons between the NTOF and CFOI, NTOF cases for the years 1990 through 1993 were coded using the ANSI Z16 standard. Fatality rates were calculated using the Current Population Survey as the source of employment information for agricultural production workers [Bureau of Labor Statistics, 1992].

RESULTS

Agricultural workers over the age of 55-years were found to account for the most fatalities in both the NTOF and the CFOI surveillance systems (Table I), with male workers accounting for approximately 98% of these deaths for both surveillance systems. Fatality rates per 100,000 workers for these older male workers ranged from 39.2 for the NTOF up to 57.8 for the CFOI. Older female agricultural workers had rates ranging from 3 deaths per 100,000 workers in the NTOF to 4 deaths per 100,000 workers in the CFOI. While these rates for older females were dramatically lower than the rates for males, they were approximately 2-times the rate for female agricultural workers less than 55-years of age.

Farm tractors accounted for the most deaths in both the CFOI (593 deaths) and the NTOF (300 deaths), with overturns accounting for approximately 53% of the tractor-related injury events in both the CFOI and the NTOF. These older workers accounted for over 60% of the tractor-related deaths for the agricultural production industry. Truck-related fatalities accounted for the second leading source

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TABLE I. Work-related deaths and fatality rates per 100,000 workers for US agricultural production workers by age group: NTOF 1990–1993 and CFOI 1992–1995.

	NTOF 1990–1993		CFOI 1992–1995	
Age Group	**Deaths**	**Rate**	**Deaths**	**Rate**
< 55-years	899	14.2	1,143	17.4
55-years +	806	33.0	1,186	46.4
Total	1705	19.5	2,329	25.5

of injury for these older agricultural workers (92 in the CFOI and 57 in the NTOF), which accounted for 38% (NTOF) to 41% (CFOI) of the truck-related deaths in this industry. These deaths were due primarily to highway incidents (52% for the CFOI and 33% in the NTOF). The third leading cause of death differed between the two surveillance systems with the CFOI identifying agricultural mowing machines (60 deaths) and the NTOF identifying animals (42 deaths). For the CFOI mowing machine deaths, the leading injury event was the victim falling from and being run over by the mower (30%), followed by mower overturns (28%). For the NTOF animal-related deaths, 86% were due to assaults by the animal.

CONCLUSIONS

The results of this analysis confirm previous studies that have shown older workers to be at the highest risk for occupational injuries within the agricultural production industry [Purschwitz and Field, 1986; Murphy, 1990; Myers and Hard, 1995]. The identification of farm tractors as the leading cause of these fatalities has also been previously reported. This risk of fatal occupational injury is given added importance by the magnitude of older worker deaths, which ranged between 47% and 51% of all agricultural production deaths in the two surveillance systems.

Public health efforts are needed to reduce the risk of tractor-related, truck-related, and machinery-related deaths to these older farm workers, both in terms of educational programs and through the development, or use of known engineering interventions. Educational programs must be tailored to these older workers, while engineering interventions will require engineers to work with these older farm workers in the design and implementation of engineering controls to ensure their acceptance by these workers.

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